a motor connected to rotate the end effector about the end effector axis to thereby provide a yaw motion; and

means for monitoring and controlling the yaw motion such that the end effector can be moved in a straight line which is not restricted to the radial direction.

---

31. (Twice Amended) A robotic arm structure providing θ motion and R motion about a primary axis, the arm structure comprising:

an end effector for transporting semiconductor substrates attached to the arm structure and being rotatable about an end effector axis;

a first motor connected to rotate the end effector about the end effector axis to provide a yaw motion;

a second motor connected to rotate the end effector to provide a roll motion of the end effector; and

means for monitoring and controlling the yaw and roll motions.

---

35. (Twice Amended) A robotic arm structure providing θ motion and R motion about a primary axis, the arm structure comprising:

an end effector for transporting semiconductor substrates attached to the arm structure and being rotatable about an end effector axis;

a first motor connected to rotate the end effector about the end effector axis to provide a yaw motion;

a second motor connected to rotate the end effector to provide a roll motion of the end effector;

a third motor connected to rotate the end effector to provide a pitch motion of the end effector; and

means for monitoring and controlling the yaw, roll, and pitch motion.

---

39. (Twice Amended) A robotic arm structure providing ~~θ~~ motion and R motion about a primary axis, the arm structure comprising:

an end effector for transporting semiconductor substrates attached to the arm structure and being rotatable ~~about an end effector~~ axis;

a first motor connected to rotate the end effector about the end effector access to provide a yaw motion;

a second motor connected to rotate the end effector to provide a pitch motion of the end effector; and

means for monitoring and controlling the yaw and pitch motions.

Please add new Claim 49 and 50 as follows:

--~~49~~ 8. (New) The robotic arm structure according to Claim 1, wherein the means for monitoring and controlling the yaw motion moves the end effector in a straight line which extends along a longitudinal axis of the end effector.

50. (New) The robotic arm structure according to Claim 1, wherein the means for monitoring and controlling the yaw motion moves the end effector in a straight line and maintains a constant orientation of the end effector.--

REMARKS

Reconsideration and allowance of the above-identified application are respectfully requested. Claims 1-7, 15-19, 31, 35, 39, and 44-48 are currently pending.

Claim 1 has been rejected under 35 U.S.C. §112 as indefinite because there was no right bracket corresponding to the left bracket in line 5 of the amended claim. Claim 1 as amended above clarifies this typographical error.